

## Grade 4

### Penn Cambria

## 14-15 School Year GRADE 4 MATH CURRICULUM OUTLINE

*The shift to the PA Core Standards has necessitated a change in our math curriculum. This document contains the outline of units and standards/goals for each unit for grade 4. The PA Core includes a heavy emphasis on application and multi-step problem solving. In addition, students must be able to show and/or explain their work as well as their reasoning.*

*Materials, resources, and assessments used in these units will be vetted by the grade level for alignment to the PA Core and to ensure strategies used are appropriate for our students. Resources might include those provided by the Common Core, the Pennsylvania Department of Education, the PDE Standards Aligned System, NY Engage, and Everyday Math.*

### Unit 1: Place Value and Multi-Digit Addition and Subtraction

Approximate time: 5 weeks

- Demonstrate an understanding that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
- Read and write whole numbers in expanded, standard, and word form.
- Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place using  $>$ ,  $=$ , and  $<$  symbols.
- Round multi-digit whole numbers to any place.
- Add and subtract multi-digit whole numbers.

### Unit 2: Unit Conversion

Approximate time: 1 week

- Know relative sizes of measurement units within one system of units including standard, metric and time.
- Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit (table of equivalencies provided).
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
- Identify time as the amount of minutes before or after the hour.

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### Unit 3: Multi-Digit Multiplication and Division

Approximate time: 9 weeks

- Multiply a whole number up to four digits by a one-digit whole number and multiply 2 two-digit numbers.
- Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.
- Estimate the answer to addition, subtraction and multiplication problems using whole numbers through six digits.
- Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.
- Multiply or divide to solve word problems involving multiplicative comparisons, distinguishing multiplicative comparison from additive comparison.
- Solve multi-step word problems posed with whole number using the four operations. Represent these problems using equations with as a symbol or letter standing for the unknown quantity.
- Identify the missing symbol (+, -,  $\times$ ,  $\div$ , =, < and >) that makes a number sentence true (single-digit divisor only)
- Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors.
- Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one-digit number.
- Determine whether a given whole number in the interval 1 through 100 is prime or composite.

### Unit 4: Geometry

Approximate time: 4 weeks

- Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Identify these in two-dimensional figures.
- Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.
- Recognize right triangles as a category, and identify right triangles.
- Recognize a line of symmetry for a two-dimensional figure. Identify line-symmetric figures and draw lines of symmetry.
- Measure angles in whole-number degrees using a protractor.
- With a protractor, sketch angles of specified measure.
- Solve addition and subtraction problems to find unknown angles on a diagram in real-world problems.

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## Unit 5: Fractions and Patterns

Approximate time: 9 weeks

- Recognize and generate equivalent fractions.
- Compare two fractions with different numerators and different denominators using the symbols  $>$ ,  $<$ , or  $=$  and justify the conclusions.
- Add and subtract fractions with a common denominator.
- Decompose a fraction or a mixed number into a sum of fractions with the same denominator, recording the decomposition by an equation. Justify decompositions.
- Add and subtract mixed numbers with a common denominator.
- Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators.
- Multiply a whole number by a unit fraction.
- Multiply a whole number by a non-unit fraction.
- Solve word problems involving multiplication of a whole number by a fraction.
- Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.
- Determine the missing element in a function table.
- Determine the rule for a function given a table.
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
- With formulas provided, apply the area and perimeter formulas for rectangles in real-world problems.
- Make a line plot to display a data set of measurements in fractions of a unit.
- Solve problems involving addition and subtraction of fractions by using information presented in line plots.
- Translate information from one type of display to another (ex: table, chart, bar graph, pictograph).

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### Unit 6: Decimals and Fractions

Approximate time: 4 weeks

- Add two fractions with respective denominators 10 and 100.
- Use decimal notation for fractions with denominators 10 and 100.
- Compare two decimals to hundredths using the symbols  $>$ ,  $=$ , or  $<$  and justify the conclusions.
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.

### Unit 7:

Approximate time: 4 weeks

- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.